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On Complements of Complements in Hungarian

Szécsényi Tibor

1 Goals

In the present paper Hungarian verbs having an infinitival argument, such as *akar* 'want', *kell* 'must', *szeret* 'like' etc. are to be examined. These verbs can be divided into two groups based on the following criterion: if they need a verb carrier[1] they function as auxiliaries, if they do not, they serve as main verbs (Kálmán et al., 1989):

(1) a. *Péter futni akar.*
P to-run wants
'Peter wants to run.'
b. *Péter el fog menni.*
P away will to-go
'Peter will go away.'
c. *Péter szeret úszni.*
P likes to-swim
'Peter likes swimming.'

In sentences (1a) and (1b) *akar* 'want' and *fog* 'will' are auxiliaries *futni* 'to run' and *el* 'away' are verb carriers. The verb *szeret* 'like' in sentence (1c) functions as a main verb having no verb carrier.

In the present paper I argue that these groups of verbs treat not only their own complements as complements, but also the complements of their infinitival complements. This is a well-known fact about the subject of the infinitive but we have to prove it for the rest of the complements. Therefore I am going to use the term *the complements of the infinitive* meaning *all complements of the infinitive but the subject.* Also, I am going to use the term *arguments of the verb* meaning *the complements and adjuncts of the verb.*

To define whether an argument is a complement of a verb or not we use the omission test proposed by Komlósy (in Komlósy, 1992, p. 316):

Omission test[2]: a constituent serves as a complement in a given sentence structure in case it is a complement which cannot be omitted.

(2) a. *Péter adni akar Marinak egy könyvet.*
P to-give wants to M a book-acc
'Peter wants to give Mary a book.'
b. **Péter adni akar Marinak*
c. *Péter szeret Marival találkozni.*
P likes M-with to-meet.
'Peter likes meeting Mary.'

[1] A verb carrier is that constituent of the senteces which lies in front of the verb immediately in neutral sentences. In non-neutral sentences it is moved behind the verb.

[2] There is another omission test (Komlósy, 1992, p. 318): in case an *x* argument licences the appearance of another argument that can be omitted, *x* is to be regarded as the (optional) complement of the regent.

d. **Péter szeret találkozni.*

What is left to be decided is whether the complements of the infinitive can be regarded as arguments of the matrix verb. If they can, they are complements as well, for they cannot be omitted.

2 Lexical background

In case of NPs an alternative way to decide whether they are the complement of a given regent or not is to check whether it gets a semantic (thematic) role from the verb or not. If they do, they are arguments, and based on our omission test they serve as complements as well. The problem is that the NP arguments of the infinitive get their case, as well as their semantic role from the infinitives alone. This fact does not support the assumption that they are arguments of the matrix verb as well, however it cannot be regarded as a counter-example either.

Examining English raising verbs we find that one of their arguments does not get the thematic role from the verb. These verbs have a predicative complement, e.g. an infinite verb the PRO-subject of which can be coindexed with the complement, therefore getting a thematic role from this infinite verb.

(3) a. *He seems to be old.*
b. *I believe him to be old.*
c. *I believe the desk to be old.*
d. *I believe him to be clever.*
e. **I believe the desk to be clever.*

It can be seen that the constituent *he* gets its case from the finite verb, not the infinite one (sentences (3a) and (3b)). The thematic role, however is given to it by the infinite verb as we can conclude from the opposition between sentence-pairs (3b) and (3c) on the one hand and (3d) and (3e) on the other. Thus, if a regent does not give a thematic role to one of its constituents does not mean that this constituent is not a complement of the verb. So when constructing a grammar we have to decide whether to treat the complements of the infinitive as the complements of the matrix verb or not.

3 Syntactic background

Since a well-motivated decision cannot be merely based on the lexical description of verbs, we have to examine the structure of the sentences containing infinitives. Katalin É. Kiss has already addressed this problem and found that sentences with infinitival constructions show properties of simple and compound sentences at the same time. Let's have a closer look at the phenomena to be explained.

3.1 Simple sentences

On the basis of Hungarian word order, the arguments of the infinitive cannot be separated from those of the matrix verb: they can mix freely with them. Moreover, if the arguments of the infinitive precede the main verb they can function as its focus and topic[3], exactly as if they were the arguments of the finite verb.

[3] In Hungarian the focus lies immediately in front of the verb, and it has a stress. Focus-constituents will be printed in capital letters. Topic-constituents lie in the very first part of the sentence, before the focus.

(4) a. *Péter egy könyvet akar Marinak adni.*
P a book-acc wants M-to to-give
'Peter wants to give a book to Mary."
b. *MARINAK akar egy könyvet adni Péter.*
'Peter wants to give a book to MARY.'
c. *Péter ADNI akar Marinak egy könyvet.*
'Peter wants TO GIVE Mary a book.'
d. *AKAR Marinak Péter egy könyvet adni.*
'Peter WANTS to give a book to Mary.'
etc.

In sentences (4abc) it is the infinitive itself (4a) or one of its arguments (4b and 4c) that occupies a position preceding the finite verb. According to a traditional transformational grammar analysis proposed by É. Kiss in a series of papers, these constituents can only get to these positions as a result of transformations. On the basis of É. Kiss' (1989) proposal the first two sentences can be analysed as either a simple or a compound sentence. In the first case the complements of the infinitive move to a position in front of the verb from the neutral argument slots after the finite verb, whereas in the second case the transformation is applied to a constituent of a subclause. This latter phenomenon occurs in (5):

(5) *Péter MARIT akarja, hogy fölvegyék az egyetemre.*
P M-acc wants that they-admit the university-on
'Peter wants MARY to be admitted to university.'

However, sentence (4c) cannot be analysed as a compound sentence, for in this case the verb, that is the head of the subclause should be moved from its position which results in an ungrammatical sentence in case of normal compound sentences.

(6) **Péter FÖLVEGYÉK akarja, hogy Marit az egyetemre.*

There is another reason why sentence (5d) cannot be analysed as a compound sentence: in this example the subject of the main verb (Peter) stands between the arguments of the infinitive (Marinak, egy könyvet). If we want to analyse this sentence as a compound we would either have to assume a downward transformation moving the subject of the finite verb to the subclause, or, as an alternative possibility, when generating the matrix sentence we have to generate an empty position after the verb where a constituent of the subclause can be moved later. Neither of these solutions are really desirable. We have to generate the complements of the infinitive in the complement slots of the finite verb, considering them the complements of this verb.

3.2 Compound sentences

Sometimes the relationship of an infinitive and its arguments is parallel to a traditional view of the relationship between a sentential head and the arguments it selects. These are the relationships between a finite verb and its focus, topic or modifier. Let's see some examples:

(7) a. *Péter szeret el-látogatni Marihoz.*
P likes away-to-visit M-to
'Peter likes visiting to Mary.'

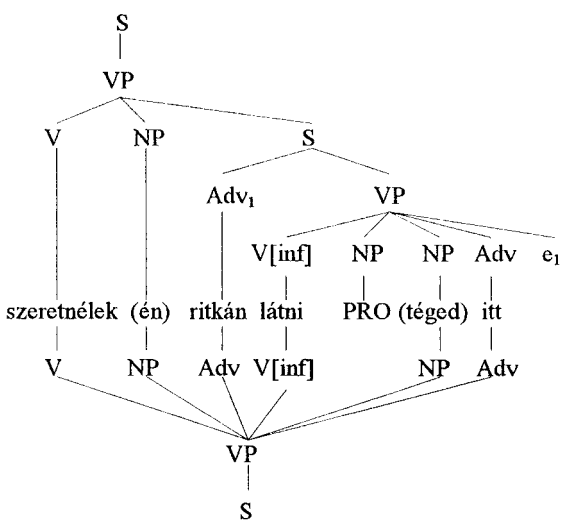
b. *Péter szeretne MARIVAL beszélni.*
P would-like M-with to-speak
'Peter would like to speak with MARY.'
c. *Péter szeretne NEM BESZÉLNI Marival.*
P would-like not-to-speak M-with
'Peter would like not to speak with Mary.'
d. *Péter szeretne NEM MARIVAL beszélni.*
P would-like not-M-with to-speak
'Peter would like to speak not with Mary (but with someone else).'
e. *Péter szeretne mindent megbeszélni Marival.*
P would-like everything-acc PFX-to-speak with M
'Peter would like to discuss everything with mary.'

(7) shows that there can be different constituents that precede the infinitive: verb modifier (7a), focus (7b), and universal quantifier (7e). Constituent negation can occur in the infinitival clause (7d), just like sentential negation (7c). On the basis of these data we can say that the infinitival expression functions as a clause, that is, the sentence containing this infinitival expression is a compound sentence. But then the arguments of the infinitive cannot be the arguments of the finite verb.

3.3 É. Kiss' solution

Earlier we raised the question whether the complement of infinitives are to be treated as belonging to the main verb or not. Now it seems that we have to do both at the same time, simultaneously analysing sentences containing an infinitive as simple AND compound sentences. That is exactly what É. Kiss proposes in her article, namely assigning two structural descriptions to the sentences in question:

(8)



Szeretnélek (én) ritkán látni (téged) itt.
would-like-I-you$_{acc}$ I rarely to-see (you-acc) here
'I would like to see you here rarely.'

At the top of the figure the structure of the compound sentence can be seen, at the bottom the simple one. The phenomena discussed above can be accounted for with the application of both sentence structures.

The problem with this double analysis is that there are grammatical Hungarian infinitival sentences that cannot be properly analysed in either way:

(9) *Ma még szeretne CSAK A KÖNYVRŐL beszélni Péter Marival.*
today would-like only the book-about to speak P M-with
'Peter would like to speak with Mary only about the book today.'

This sentence could not be analysed as a compound sentence within the framework described by É. Kiss, for the subject of the finite verb is in the infinitival expression. However, it cannot be analysed as a simple sentence either, as there is a focus phrase in it (*csak a könyvről*), which could get into a position after the main verb only if there were another focus-constituent in front of the verb:

(10) *PÉTER látta meg csak a könyvet.*
P saw PFX only the book
'It was Peter who saw only the book.'
**Péter meglátta csak a könyvet.*
'Peter saw only the book.'

So the problem is not solved yet.

4 An alternative proposal

My proposal is to change our view of focus. So far we called a constituent focus if it occupied the focus position, which we regarded as part of the sentence structure. That is, we identified the focus with the focus position: if we found a focus in the infinitival expression we had to conclude that this infinitival expression has a focus position, which is an essential part of Hungarian sentence structure.

This problem is easier to solve if we discard the strictly positional analysis of focus. Instead of bounding focus to the sentence structure, let us try to describe it as a relationship between the verb and one of its arguments. According to my proposal it is the regent that can make a focus of one of its complements, that is, every focus is *the focus OF some other constituent*. Put differently, a verb can give a focus feature to one of its argument.

If we accept that the phenomena discussed above can be regarded as the mutual relationship of two constituents, there can be no objection to treating sentences with an infinitival expression as simple sentences. Moreover, the phenomena illustrated with the examples (4) force us to choose this solution. If we analyse them as simple sentences, however, the complements of the infinitive have to be regarded as arguments, therefore complements of the main verb, as the omission test shows. In this way we can give a simple solution to the phenomena discussed in this paper: the mixed occurance of the arguments of the infinitive and those of the main verb is a natural phenomenon, as each of them is a complement of the finite verb. For the same reason is it possible that the infinitive and its complements can function as topic or focus of the main verb. The infinitive itself can also have focus of its own (and also quantifiers and negated arguments), for it still functions as a regent, that is, it can mark one of its arguments as focus.

5 Formal description

How exactly the "kidnapping" of these complements happens can be described within the framework of the Head-driven Phrase Structure Grammar (HPSG) (Pollard, Sag, 1994). This framework is especially good for this purpose, for the complement structures are detailed enough to serve as a basis for each level of the sentence analysis.

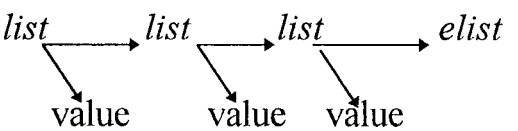
5.1 A brief survey of HPSG

In HPSG the description of linguistic objects is done with the help of *feature structures* independently of whether the unit to be described is lexical or phrasal. Feature structures consist of feature-value pairs. The value of a feature can be another feature structure or an atomic value. Every feature structure is a directed acyclic graph, where features are represented by edges. The value of a feature is the node where the edge points. If a node is the starting point of an edge it represents a feature structure, otherwise it gets an atomic value. The analysis of a sentence is itself a feature structure, built up from feature structures representing the constituens, whose smallest parts are feature structures of lexical units.

The difference between lexical and phrasal units is that only the latter can have the DTRS feature, whose value is a list of feature structures. The elements of this list can be phrasal or lexical units.

An empty list is represented by the atomic value *elist*. Otherwise a list contains two features: one of them is a feature structure or an atomic value representing one element of the list, the other is another list (which is actually the rest of the original list). The graph of a list is shown in (11) (without the names of the features).

(11)



The feature structure of a linguistic unit (a phrase or a lexical unit) contains the phonological description as the value of the PHON feature, various syntactic and semantic information as the value of the SYNSEM feature and, in the case of non-lexical units a DTRS feature, whose value is the list of constituents.

Within the SYNSEM feature we differentiate three further features: CATEGORY, CONTENT and CONTEXT. The value of the CATEGORY feature is a feature structure that contains mainly syntactic information. For instance the HEAD feature gets the values that are shared with the mother node. The detailed description of the HEAD feature structure can be omitted here.

The *valence features* list the complements of a constituent, and they also belong to the CATEGORY feature. In English the valence features are the SUBJ, standing for subject, and a COMPS feature with a list value containing all the complements of the verb, but the subject, in order of obliqueness (the first element being the less oblique). The valence features have the same type of values as the SYNSEM feature.

The value of the CONTENT feature contains the agreement features (INDEX) and the situation semantic description of the object. The values of the CONTENT and CONTEXT features are of no importance for the purposes of the present paper, therefore I omit their detailed description.

For example the feature structure of the English verb *gives* is the following (12):

(12)

$$\begin{bmatrix} \text{PHON: } \textit{gives} \\ \text{SYNSEM:} \begin{bmatrix} \text{CAT:} \begin{bmatrix} \text{HEAD: V[fin]} \\ \text{SUBJ: NP[nom]}_{(1)[3rd,sing]} \\ \text{COMPS: } \langle \text{NP[acc]}_{(2)}, \text{NP[acc]}_{(3)} \rangle \end{bmatrix} \\ \text{CONTENT:} \begin{bmatrix} \text{RELN: give} \\ \text{GIVER: (1)} \\ \text{GIVEN: (2)} \\ \text{GIFT: (3)} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

Since *gives* is a lexical unit, it has no DTRS feature.

NP and V are abbreviations describing the matching feature structures.

The right-hand subscript of NP stands for the INDEX feature of the noun phrase, meaning that it has to be third person singular.

The numbers in brackets (tags) mean *structure-sharing*, that is, feature structures marked with the same numbers have the same features with exactly the same values after the tags. In (12) this means that we have to identify the subject of the verb with the semantic role of the *giver*. Due to the structure-sharing there will be acyclical loops in the directed graphs of a feature structure.

Within HPSG rewriting rules are divided into ID (Immediate Dominance) and LP (Linear Precedence) rules.

What is especially appealing in HPSG from the point of view of the present problem is its explicit handling of the set of complements. Due to this, rules and restrictions are easy to formalise, and any change in the complement structure is directly reflected in the sentence structure. A further advantage is that the order of constituents is defined with binary relations, which determine the position of two constituents relative to each other.

5.2 The lexical representation of raising verbs

At first sight it might seem to be a disadvantage that the complement structure is set and detailed in the lexicon, but if we adopt the method used in the treatment of English raising verbs no problem arises. Raising verbs do not have any restriction on their subject or object complement in the lexicon apart from defining its case and prescribing that it has to be structure-shared with the subject of their predicative complement. This predicative complement does not provide its subject with case, as non-finite verbs do not define the case of their subjects (see (3)) (like in GB).

The description of the SYNSEM feature of the verbs *seem* and *believe* is as follows:

(13) a.

$$\begin{bmatrix} \text{CAT:} \begin{bmatrix} \text{SUBJ:(2)[nom]} \\ \text{COMPS:} \langle \text{VP[inf, SUBJ:(2)]:(1)} \rangle \end{bmatrix} \\ \text{CONTENT:} \begin{bmatrix} \text{RELATION: seem} \\ \text{SOA - ARG: (1)} \end{bmatrix} \end{bmatrix}$$

b.

$$\begin{bmatrix} \text{CAT:} \begin{bmatrix} \text{SUBJ: NP[nom]}_{(1)} \\ \text{COMPS: } \langle (2)[\text{acc}], \text{VP[inf, SUBJ: } (2)]:(3) \rangle \end{bmatrix} \\ \text{CONTENT:} \begin{bmatrix} \text{RELATION: believe} \\ \text{BELIEVER: (1)} \\ \text{SOA – ARG: (3)} \end{bmatrix} \end{bmatrix}$$

As we can see, the complement of the verb bearing tag (2) is the same as the subject of the infinitive. This structure-sharing does not result in a cyclic graph.

The tags on the right side of the COMPS list ((1) and (3) respectively) refer to the value of the CONTENT feature of the verb phrase. In (13b) this means that the thing believed is the state of affairs the verb phrase expresses.

5.3 Application

Hungarian verbs with infinitival complements are related to English raising verbs so far as they treat one or more complement of their infinitives as their own complements. The English verb provides them with case, the Hungarian with focus feature, but none provide them with a semantic role. The difference is that while raising verbs do this with only one specified complement of the infinitive, their Hungarian counterparts do it with all the complements of the infinitive but the subject.

When adopting the treatment described above we must not forget that we may not know exactly how many arguments the infinitive has. The nature of lists (see (11)) can be a solution to this problem. By definition we do not know the exact number of the elements in a non-empty list, all we know about it is that it has at least one element. The exact number of the elements is irrelevant to the purposes of the description. So the COMPS list of verbs like *szeret* will include its own complements and in addition, the complements of its infinitive as well:

(14)

$$\begin{bmatrix} \text{PHON: } \textit{szeret} \\ \text{SYNSEM:} \begin{bmatrix} \text{CAT:} \begin{bmatrix} \text{HEAD: V[fin]} \\ \text{SUBJ: NP}_{(1)[3\text{rd,sing}]}\text{[nom]} \\ \text{COMPS: } \langle \text{V[inf, SUBJ: NP}_{(1)}\text{, COMPS:(2)]:(3)} \rangle + (2) \end{bmatrix} \\ \text{CONTENT:} \begin{bmatrix} \text{RELATION: like} \\ \text{LIKER: (1)} \\ \text{SOA - ARG: (3)} \end{bmatrix} \end{bmatrix} \end{bmatrix}$$

The symbol + stands for the concatenation of two lists. That (2) is really a list, not only an element of the list can be seen from the fact that it is introduced as COMPS: (2), which means a list of complements as opposed to COMPS: <(2)> which stands for one element of a given list of complements. Such a concatenation of elements is allowed in HPSG, it does not lead to inconsistency within the system, for the graph representing the resulting feature structure does not contain a cyclic loop.

6 Verb carriers

I have already mentioned and it can be clearly seen from the feature structure (14) that verbs with infinitival complements have a special relationship to the subjects of their infinitives. While the rest of the complements are simply copied to the complement list of the matrix verb, the subject of the infinitive is merely co-indexed with the subject of the matrix verb. It can be stated in general that the subject complement of a verb is different from the rest of the complements. This made the founders of HPSG divide the subcategorization frame of the verb into the features of SUBJ and COMPS (9th section in Pollard-Sag, 1994). In the case of Hungarian, however, it is not only the subject that is a separate unit, but another type of complements as well: the verb modifier, or, as Kálmán et al. call it, the verb carrier (Kálmán et al., 1989).

Verb carriers are given a special treatment: they are the closest relations of the verb, and as such when the sentence is neutral, they stand immediately on the left side of the verb. The verb carrier forms an independent phonological and syntactic unit, but from a semantic point of view it cannot be separated from the verb, especially if we think of the non-compositional carrier-verb expressions such as *becsap* (in-strike, 'make a fool of'). When a verb carrier is part of a sentence structure containing an infinitive, its behaviour is particularly awesome.

A group of the verbs with infinitives require a verb carrier (these verbs are called auxiliaries by Kálmán et al. 1989). In case the infinitive does not have an own verb carrier, the infinitive itself functions as the verb carrier of the finite verb (see sentences (15ab)). Otherwise the verb carrier of the infinitive is the verb carrier of the finite verb as well (15cd):

(15) a. *Péter úszni akar.*
P to-swim wants
'Peter wants to swim.'
b. *PÉTER akar úszni.*
P wants to-swim
'It is Peter who wants to swim.'
c. *Péter el akar menni.*
P away wants to-go
'Peter wants to leave.'
d. *PÉTER akar el-menni.*
P wants away-to-go
'It is Peter who wants to leave.'

Bearing these in mind, I put forward the following proposal: in the same way as the subject was treated, we should separate the verb carriers from the rest of the complements. So a new valence feature is to be introduced at the lexical description of a verb, that of CARRIER, the value of which is the carrier of a given verb, or, if it does not have one, the *empty* value. Of course different lexical rules may change this; e.g. if a verb with a verb carrier is turned into a verb with focus (that is the, focus feature appears on the verb and on one of its complements) its carrier feature is deleted, the value of it appears on the COMPS list, that is, the earlier carrier turns into an ordinary complement.

Therefore, verbs with infinitives that do not have a verb carrier have the structure described under (14) with a slight modification: the feature-value pair of CARRIER: *empty* is added to them. The valence features of the auxiliary verbs will be formalised in the following way:

(16) a.

$$\begin{bmatrix} \text{SUBJ: NP[nom]}_{(1)} \\ \text{COMPS: } \langle\ \rangle + (2) \\ \text{CARRIER: V[inf, SUBJ: NP}_{(1)}\text{, COMPS: (2), CARRIER: empty]} \end{bmatrix}$$

b.

$$\begin{bmatrix} \text{SUBJ: NP[nom]}_{(1)} \\ \text{COMPS: } \langle \text{V[inf, SUBJ: NP}_{(1)}\text{, COMPS: (2), CARRIER: (3)]} \rangle + (2) \\ \text{CARRIER: (3)} \end{bmatrix} \wedge (3) \neq \text{empty}$$

7 Conclusion

The subject of the present paper is the description of the relationship between verbs with infinitives and the complements of the infinitives they take. Based on the reasoning described above we can conclude that these complements are the complements of both the infinitive and the matrix verb. The lexical representation of the verbs in question is carried out in line with the treatment of raising verbs in HPSG.

Presumably the proposal put forward can be applied not only to the treatment of infinitival sentences but other similar constructions; for instance sentences containing copulas. Hence the expression in the title 'complement of complements' rather than 'complements of infinitives'. Let's see an example:

Tegnap heves vita volt a parlamentben a költségvetésről.
yesterday heated debate was the Parliament-in the budget-about
'There was a heated debate about the budget in the Parliament.'

In this sentence the matrix verb (*volt)* treats the complement (*a költségvetésről)* of its nominal complement (*vita)* as its own. So the paper does not merely present an alternative solution for the treatment of infinitival sentences but introduces a device that can be fit for application in further areas.

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